

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

1-44. (Canceled)

45. (Currently amended) A method of ~~causing non-spontaneous and controlled~~inducing differentiation of an undifferentiated human embryonic stem (hES) ~~stem~~ cell into a mesodermal cell, said method comprising:

~~applying a differentiation signal to the undifferentiated stem cell wherein the differentiation signal induces the differentiation~~culturing the hES cell in the presence of an embryonic cell and/or extracellular medium of an embryonic cell under conditions that induce differentiation of the undifferentiated stem cell into the mesoderm cell.

46. (Currently amended) A method of obtaining a cell population comprising a sub-population of differentiated cells of a mesodermal lineage wherein the differentiated cells are derived from undifferentiated ~~stem~~hES cells in the cell population, said method comprising:

~~causing~~inducing differentiation of the undifferentiated stem cells according to claim 45.

47-48. (Canceled)

49. (Currently amended) A method according to claim ~~[[48]]~~45 where the embryonic cell is an endodermal or ectodermal cell.

50. (Previously presented) A method according to claim 49 where the embryonic cell is an endodermal cell.

51. (Previously presented) A method according to claim 49 wherein the cell is derived from visceral endoderm tissue, or visceral endoderm-like tissue.

52. (Previously presented) A method according to claim 51 wherein the visceral endoderm or visceral endoderm-like tissue is derived from an early post-gastrulation embryo.

53. (Previously presented) A method according to claim 51 wherein the visceral endoderm-like tissue is an embryonic cell line.

54. (Previously presented) A method according to claim 53 wherein the embryonic cell line is an END-2 cell line.

55. (Currently amended) A method according to claim [[48]]45 wherein the embryonic cell is derived from mouse embryo E7.5.

56-59. (Canceled)

60. (Currently amended) A method according to claim 45 or 46 further comprising:
preculturing the embryonic cell to a substantially confluent monolayer; and
co-culturing the stemhES cell in the presence of the embryonic cell monolayer and/or extracellular media of the embryonic cell monolayer.

61. (Currently amended) A method according to claim 60 wherein the stemhES cell and embryonic cell monolayer are separated by a filter or a cellular matrix.

62. (Currently amended) A method according to claim 45 or 46 wherein the undifferentiated stemhES cell differentiates into a cell or a cell lineage selected from the group including muscle cells, endothelial cells, epithelial cells, haematopoietic cells or neural cells.

63. (Previously presented) A method according to claim 62 wherein the stem cell differentiates to a muscle cell or a vascular endothelial cell.

64. (Previously presented) A method according to claim 63 wherein the muscle cell is a cardiomyocyte or a skeletal muscle cell.

65. (Currently amended) A method according to claim 64 wherein the stemhES cell differentiates to a cardiomyocyte or a cardiomyocyte cell lineage said method comprising:

~~applying the differentiation signal by culturing the stemhES cell in the presence of an embryonic visceral endoderm cell and/or extracellular medium of an embryonic visceral endoderm cell.~~

66-67. (Canceled)

68. (Currently amended) A method according to claim ~~[[67]]~~45 wherein the embryonic cell is derived from extraembryonic ectoderm and/or endoderm tissue ~~is extraembryonic.~~

69. (Previously presented) A method according to claim 68 further including culturing the stem cells in the presence of VEGF.

70. (Currently amended) A method according to claim 45 or 46 wherein the stemhES cell is genetically modified.

71. (Previously presented) A method according to claim 46 wherein the sub population consists essentially of cardiomyocytes.

72-86. (Canceled)

87. (Previously presented) An isolated cell population prepared by the method according to claim 46.

88. (Previously presented) A differentiated cell prepared by a method according to claim 45 or 46.

89. (Previously presented) A cardiomyocyte prepared by the method according to claim 65.

90. (Currently amended) A skeletal muscle cell prepared by the method according to claim ~~[[66]]~~45.

91. (Currently amended) A vascular endothelial cell prepared by the method according to claim ~~[[67]]~~45.

92-132. (Canceled)